PMC-EF2a

(2.04.02)

U.S. DEPARTMENT OF ENERGY
EERE PROJECT MANAGEMENT CENTER
NEPA DETERMINATION

RECIPIENT: WA Dept of Commerce **STATE:** WA

PROJECT TITLE : SEP ARRA - WSU Anaerobic Digester - Nutrient Recovery Technology - Vander Haak Dairy

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
	EE0000139	GFO-0000139-040	0

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Order 451.1A), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:

Description:

A9 Information gathering, analysis, and dissemination

Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)

B1.7 Electronic equipment

Acquisition, installation, operation, modification, and removal of electricity transmission control and monitoring devices for grid demand and response, communication systems, data processing equipment, and similar electronic equipment.

B3.9 Projects to reduce emissions and waste generation

Projects to reduce emissions and waste generation at existing fossil or alternative fuel combustion or utilization facilities, provided that these projects would not have the potential to cause a significant increase in the quantity or rate of air emissions. For this category of actions, "fuel" includes, but is not limited to, coal, oil, natural gas, hydrogen, syngas, and biomass; but "fuel" does not include nuclear fuel. Covered actions include, but are not limited to: (a) Test treatment of the throughput product (solid, liquid, or gas) generated at an existing and fully operational fuel combustion or utilization facility; (b) Addition or replacement of equipment for reduction or control of sulfur dioxide, oxides of nitrogen, or other regulated substances that requires only minor modification to the existing structures at an existing fuel combustion or utilization facility, for which the existing use remains essentially unchanged; (c) Addition or replacement of equipment for reduction or control of sulfur dioxide, oxides of nitrogen, or other regulated substances that involves no permanent change in the quantity or quality of fuel burned or used and involves no permanent change in the capacity factor of the fuel combustion or utilization facility; and (d) Addition or modification of equipment for capture and control of carbon dioxide or other regulated substances, provided that adequate infrastructure is in place to manage such substances.

Rational for determination:

DOE is proposing to provide $227,687 in SEP ARRA funding to the Washington Department of Commerce, sub-recipient Washington State University (WSU), to fund the installation of an integrated nutrient recovery system, a Class A fiber production process and an H2S scrubbing system, which works in series with dairy manure anaerobic digesters (AD). WSU proposed to install the equipment at Vander Haak Dairy.

Previous NEPA determination for FPE Renewables, LLC (FPE) EE0000139 (CX B5.1) signed on 5.26.2010 allowed FPE to upgrade the existing AD at Vander Haak Dairy. This NEPA review applies to the installation of the integrated nutrient recovery system, which was completed during this initial upgrade.

The Vander Haak Dairy received funding from both a US Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Conservation Innovation Grant (CIG) and a DOE SEP ARRA grant. DOE funding would serve as match for the $1,500,000 NRCS CIG funding.

The Vander Haak Dairy is a scrape dairy with 500 dairy cows and 400 heifer replacements on 400 acres of owned and rented land. The dairy is located at 690 Visser Road, Lynden, Washington 98264 in Whatcom County, 10 miles north of Bellingham, Washington. The farm is in a rural area with few neighbors. The land is zoned Agricultural and Farm. Currently, the Vander Haak Dairy produces 35,000 gallons of effluent and manure per day.

The project was completed on Vander Haak property and previously disturbed land. Total footprint of the installation of the integrated nutrient recovery system was 4,000 square-feet (0.09 acres) and involved excavation and trenching, foundation and footer installation, equipment fabrication and installation, and electrical wiring. The equipment required as part of the nutrient technology included: insulation, heat recovery/exchangers, tanks, pumps, casings, piping, nozzles, mist eliminators and sensors.

The facility includes an anaerobic manure digester, a concrete receiving pit and a mechanical building with attached fiber storage area. The biogas produced is burned in a generator to produce electricity for export to the grid. Recovered heat is used for facility process heating. The Vander Haak Dairy project components include a digester vessel, a mechanical building to house the 650 kW generator and equipment to store and transfer electricity and manure.

The nutrient recovery technology was integrated into the existing AD system. This system intercepts the manure/liquid effluent immediately after leaving the digester. The digested effluent is heated to 70o C for one hour, resulting in Class A solids, pathogen control and nutrient recovery. The only inputs are waste engine heat, air, parasitic electricity from the digester, and sulfuric acid (H2S). The treated effluent is then pumped through closed piping systems to the collection lagoon. After storage, lagoon water is seasonally applied to fields as per standard practice and according to the nutrient management plans. The nutrient recovery system does not increase or decrease the overall flow of manure wastewater, but the nutrient content is considerably reduced due to inclusion of the integrated nutrient recovery system. The diverted bio-fertilizer products/nutrients are sold off the farms for revenue.

By integrating the nutrient technology systems, the AD process recovers 70-80% of total ammonia concentration in digester effluent and sequesters it in the form of ammonia sulfate fertilizer. A total of 80% of the phosphorous is recovered as organic solids for use and/or export off of the farm. This reduces the amount of ammonia released.

Air quality is improved because the trapped ammonia in the manure is no longer released upon storage and application. By significantly reducing ammonia release to the air, odor concerns are mitigated and new farm-based ammonia standards and existing PM standards are better met. In addition, as a refining step, the treated effluent has raw biogas passed through it to return the pH back to neutral, while also absorbing H2S. The absorbance of some H2S leads to less wear-and-tear on the engines and reductions in H2S releases from the engine. The sulfuric acid is used during the process and is stored and used on site.

The project resulted in improved water quality of the liquid waste effluent due to the reduced amount of pathogens in the manure. Therefore, the treated effluent has a reduced nutrient concentrations applied to the fields resulting in a reduced threat of nutrient runoff to surface waters.

This Vander Haak Dairy is located within a Coastal Zone Management Area (CZMA). During USDA's initial NEPA review in May of 2004, USDA determined the original AD project would not have a negative impact on CZMA. Because the integrated nutrient recovery system was an addition to the existing equipment, CZMA was not impacted.

The existing facility has been previously disturbed from construction activities; therefore, there were no impacts to cultural resources. The proposed project did not result in adverse impacts to threatened and endangered species, floodplains (FEMA map # 530198), wetlands, and waters of the United States as these are not known to occur in the area.

Based on this information, DOE has determined the work outlined is consistent with activities identified in categorical exclusion A9 (information gathering) B1.7 (acquisition and installation of data processing equipment and similar electronic equipment) and B3.9 (addition of equipment for capture and control of regulated substances).

NEPA PROVISION

DOE has made a final NEPA determination for this award

Insert the following language in the award:

If you intend to make changes to the scope or objective of your project you are required to contact the Project Officer identified in Block 11 of the Notice of Financial Assistance Award before proceeding. You must receive notification of approval from the DOE Contracting Officer prior to commencing with work beyond that currently approved.

Note to Specialist :

Cristina Tyler 12.5.2011

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: _____ Date: 12/7/2011

NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION